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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/587,583	07/28/2006	Jonathan Hughes	000444-001	9687
94799 7590 03/30/2011 Law Office of Shruti Costales, PLLC 2020 Pennsylvania Avenue NW #310 Washington, DC 20006				
EXAMINER ARIANE, KADE				
ART UNIT		PAPER NUMBER		
1651				
NOTIFICATION DATE		DELIVERY MODE		
03/30/2011		ELECTRONIC		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

shruti@shrutilaw.com  
info@shrutilaw.com

### Office Action Summary

**Application No.**

10/587,583

**Applicant(s)**

HUGHES ET AL.

**Examiner**

KADE ARIANI

**Art Unit**

1651

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12/07/2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-3,5-21 and 23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3,5-21 and 23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-942)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

***DETAILED ACTION***

***Pre-appeal Brief Review***

In view of the notice of panel decision from pre-appeal brief filed on January 14, 2011, the prosecution is reopened, the rejection of claims 1, 2, 5, 17, 18, 20, 21 and 23 under 35 U.S.C. 102(e) as being anticipated by Scheimann (US Patent No. 7,566,469 B2), the rejection of claims 1-3, 5, 10, 17-21 and 23 under 35 U.S.C. 103(a) as being unpatentable over Scheimann (US Patent No. 7,566,469 B2) in view of Wall et al. (Journal of Agricultural & Food Chemistry, July-August 1983, p.770-775), and the rejection of claims 1-2, 5-9, 11-18, 20, 21 and 23 under 35 U.S.C. 103(a) as being unpatentable over Scheimann (US Patent No. 7,566,469 B2) in view of Moffett (US Patent No. 6,132,625) and further in view of Coffey et al. (US 2003/0155091 A1) and of Ovenden et al. (Colloids and surfaces A: Physicochemical and Engineering Aspects, 2002, Vol. 197, p.225-234), are withdrawn.

A Supervisory Patent Examiner (SPE) has approved of reopening prosecution by signing below:

/Michael G. Wityshyn/  
Supervisory Patent Examiner, Art Unit 1651

Applicant's arguments with respect to claims 1-3, 5-21 and 23 have been fully considered but are moot in view of the new ground(s) of rejection.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-3, 5-21, and 23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1 (line 5) the recitation "wherein the fermentation liquor has been subjected to a temperature of at least 50 °C" is confusing and therefore indefinite because from the way it is written it is not exactly clear what it is that the applicant is trying to encompass with this limitation, specifically because the temperature of the liquor when subjected to the solids-liquid separation stage/system is not clear. It would appear that Applicants intended for a method in which a post fermentation liquor (from which the fermentation product has been removed) to have a temperature of at least 50 °C when subjected to the solids-liquid separation stage, however this is not clear. Therefore, claim 1 fails to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Clarification is required.

### ***Double Patenting Rejections***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent

and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-3, 5-21, and 23 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 9, and 12-20 of Hughes et al. US patent No. 7,455,997 B2 (US application No. 10/523302). Although

the conflicting claims are not identical, they are not patentably distinct from each other because:

Claims 1, 9, and 12-20 of Hughes teach a process of separating suspended solids from a fermentation liquor by subjecting the liquor to a solids-liquid separation system comprising the steps of forming a fermentation product at a temperature of at least 50°C ((i) to (ii)), and subjecting the mixture to one or more separation stages, separating the fermentation product from the broth by employing one or more flocculation agents ((ii) and (viii)), introducing cationic and anionic polymers into the mixture (claim 17), swellable clays and silica based materials (claim 13), solid by-product is lignin and analogous material (claim 19), fermentation product is ethanol, glycerol, and amino acids (claim 20).

Therefore, it would have been obvious to one of ordinary skilled in the art at the time the invention was made to use the process disclosed by of Hughes to provide a process of separating suspended solids from a fermentation liquor by subjecting the liquor to a solids-liquid separation stage.

With respect to the rejection of claims 1-3, 5-21, and 23 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 9, and 12-21 of Hughes US patent No. 7,455,997 (US application No. 10/523302), Applicant stated (page 1 of the Pre-appeal brief request on 12/07/2010) a terminal disclaimer over '997 patent will be submitted once allowable subject matter has been agreed upon.

This rejection can be overcome by filing a terminal disclaimer.

Claims 1-3, 5-21, and 23 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 2, 4-8, 17 and 19 of Hughes et al. US patent No. 7,608,191 B2 (US application No. 10/587582). Although the conflicting claims are not identical, they are not patentably distinct from each other because:

Claims 1, 2, 4-8, 17 and 19 of US patent No. 7,608,191 B2 teach a process of separating suspended solids from a fermentation liquor by subjecting the liquor to a solids-liquid separation system, the method comprising treating the fermentation liquor that is produced in a fermentation process for the production of a fermentation product with at least 50% by weight of an anionic polymer having an intrinsic viscosity of at least 4 dl/g, a (meth) acrylic acid, the fermentation liquor is subjected to a distillation stage (subjected to a temperature of at least 50°C), the fermentation product is recovered and then subjected to the solids-liquid separation system.

Therefore, it would have been obvious to one of ordinary skilled in the art at the time the invention was made to use the process taught by US patent No. 7,608,191 B2 to provide a process of separating suspended solids from a fermentation liquor by subjecting the liquor to a solids-liquid separation stage.

This rejection can be overcome by filing a terminal disclaimer.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

The rejection of claims 1, 2, 5, 17, 18, 20, 21 and 23 under 35 U.S.C. 102(e) as being anticipated by Scheimann (US Patent No. 7,566,469 B2), is withdrawn.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The rejection of claims 1-3, 5, 10, 17-21 and 23 under 35 U.S.C. 103(a) as being unpatentable over Scheimann (US Patent No. 7,566,469 B2) in view of Wall et al. (Journal of Agricultural & Food Chemistry, July-August 1983, p.770-775), is withdrawn.



The rejection of claims 1-2, 5-9, 11-18, 20, 21 and 23 under 35 U.S.C. 103(a) as being unpatentable over Scheimann (US Patent No. 7,566,469 B2) in view of Moffett (US Patent No. 6,132,625) and further in view of Coffey et al. (US 2003/0155091 A1) and of Ovenden et al. (Colloids and surfaces A: Physicochemical and Engineering Aspects, 2002, Vol. 197, p.225-234), is withdrawn.

Claims 1-3, 5-21, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hughes (US patent No. 7455,997 B2) in view of Scheimann (US Patent No. 7,566,469 B2) and of Moffett (US Patent No. 6,132,625).

Hughes teaches a process of separating suspended solids from a fermentation liquor (flocculation and separation of solids from the fermentation liquor) comprising, the steps of forming a fermentation product at a temperature of at least 50°C ((i) to (ii)) (claim 1), subjecting the mixture to one or more separation stage, separating the fermentation product from the broth by employing one or more flocculation agents, mechanical dewatering stage (filter press) ((ii) and (viii)) in claim 1), introducing cationic and anionic polymers into the mixture, (claim 17), adding swellable clays and silica based materials (claim 13), solid by-product is lignin and analogous material (claim 19), fermentation product is ethanol, glycerol, and amino acids (claim 20). Hughes also teaches the fermentation product is separated from the broth by passing the broth comprising the fermentation product into a distillation stage, where the fermentation compound is collected as a distillate and the residue `still bottoms` is removed (claim 21). Hughes teaches anionic copolymer comprising (meth) acrylic acids (monomers)

(column 6 lines 9-10), anionic and cationic polymers exhibits an intrinsic viscosity of at least 4 dl/g (column 6 lines 20-23). Hughes further teaches the charged material may be used in amounts of at least 0.002% based on weight of suspended solids, and doses of 1.0% or higher (column 8 lines 36-43). Hughes further teaches recycling the wash water (column 2 lines 7-10).

Scheimann teaches dewatering corn stillage solids by adding anionic copolymer comprising acrylic acid sodium salt and separating the water during a process of corn for fuel ethanol production which contains non-starch components of the grains, protein, germ hull & fiber, and the dried solids are used to manufacture animal feed (Abstract, column 4 lines 44-45, column 1 lines 15-25). Scheimann teaches anionic polymer is formed using 20-60 percent by weight monomers (column 4 lines 44-45), and adding 100, 200, 300 ppm of the anionic polymer to a fermentation liquor (column 6 Example 1 and Table 1). Scheimann teach the effective dose of the anionic polymer can be optimized to obtain a proper polymer/particle interaction (column 5 lines 40-45). Therefore, a person of ordinary skill in the art at the time the invention was made would have been motivated to apply the prior art teachings and to optimize the percent by weight monomers in the method as taught by Hughes according to the teachings of Scheimann.

Moffett teaches using a mixture of anionic polymers and cationic polymers to process the liquid stream containing biosolids, to separate solids (biosolids) from the aqueous stream of distilleries (wet-milling plants of grains) (column 2 lines 35-41, column 3 lines 10-15, and col. 7 lines 4732-59). Moffett teaches using cationic polymer

selected from polyamines (col. 5 lines 36-37). (It must be noted that because the cationic polymer taught by Moffett is polyamines same as the claimed cationic polymer therefore it must exhibits the claimed charge density and intrinsic viscosity). Moffett teaches the anionic polymer and cationic polymer are added to the stream in any sequential order (col. 6 lines 65-67). Moffett teaches cationic polymer is added from about 0.2 to 5000 ppm based on the solution weight (col. 5 lines 8-10). Moffett further teaches the amount of cationic and anionic polymers must be in an effective amount to produce flocculated biosolids (col. 5 lines 6-10). Moffett also teaches the effective amount of polymer (dose) to be added to the aqueous stream which comprises solids (biosolids) must be enough to neutralize the surface charges of the solids in the aqueous stream, and the effective amount depend on the several factors including the surface charges present on the biosolids in the aqueous stream, the type of biosolids, and the pH of the aqueous stream, and the effective amount can be determined by means of available and known methods to those skilled in the art (col. 5 lines 16-25 and 50-55). Therefore, a person of ordinary skill in the art at the time the invention was made would have realized that the dose, the type of the polymers, the charge density and intrinsic viscosity of the polymer used in a solid-liquid separation system could have been optimized in the method of Hughes using the known methods and according to the teachings of prior art.

### ***Conclusion***

No claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kade Ariani whose telephone number is (571) 272-6083. The examiner can normally be reached on IFP.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Wityshyn can be reached on (571) 272-0926. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Kade Ariani/  
Primary Examiner, Art Unit 1651